

High Voltage IGBT

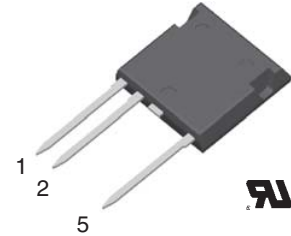
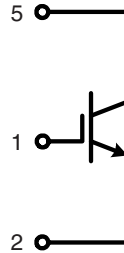
in High Voltage
ISOPLUS i4-PAC™

$$I_{C25} = 32 \text{ A}$$

$$V_{CES} = 2500 \text{ V}$$

$$V_{CE(sat)} = 3.2 \text{ V}$$

$$t_f = 250 \text{ ns}$$



IGBT

Symbol	Conditions	Maximum Ratings	
V_{CES}	$T_{VJ} = 25^{\circ}\text{C to } 150^{\circ}\text{C}$	2500	V
V_{GES}		± 20	V
I_{C25}	$T_C = 25^{\circ}\text{C}$	32	A
I_{C90}	$T_C = 90^{\circ}\text{C}$	19	A
I_{CM}	$V_{GE} = \pm 15 \text{ V}; R_G = 47 \Omega; T_{VJ} = 125^{\circ}\text{C}$	70	A
V_{CEK}	RBSOA, Clamped inductive load; $L = 100 \mu\text{H}$	1200	V
P_{tot}	$T_C = 25^{\circ}\text{C}$	250	W

Symbol	Conditions	Characteristic Values ($T_{VJ} = 25^{\circ}\text{C}$, unless otherwise specified)		
		min.	typ.	max.
$V_{CE(sat)}$	$I_C = 19 \text{ A}; V_{GE} = 15 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$	3.2	3.9	V
		4.7		V
$V_{GE(th)}$	$I_C = 1 \text{ mA}; V_{GE} = V_{CE}$	5		8 V
I_{CES}	$V_{CE} = V_{CES}; V_{GE} = 0 \text{ V}; T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$	0.2	0.15	mA mA
I_{GES}	$V_{CE} = 0 \text{ V}; V_{GE} = \pm 20 \text{ V}$		500	nA
$t_{d(on)}$	Inductive load, $T_{VJ} = 125^{\circ}\text{C}$ $V_{CE} = 1500 \text{ V}; I_C = 19 \text{ A}$ $V_{GE} = \pm 15 \text{ V}; R_G = 47 \Omega$		100	ns
t_r			50	ns
$t_{d(off)}$			600	ns
t_f			250	ns
E_{on}			15	mJ
E_{off}		30	mJ	
C_{ies}	$V_{CE} = 25 \text{ V}; V_{GE} = 0 \text{ V}; f = 1 \text{ MHz}$		2.28	nF
C_{oes}			103	pF
C_{res}			43	pF
Q_{Gon}	$V_{CE} = 1500 \text{ V}; V_{GE} = 15 \text{ V}; I_C = 19 \text{ A}$		142	nC
R_{thJC}			0.5	K/W

Features

- High Voltage IGBT
 - substitute for high voltage MOSFETs with significantly lower voltage drop and comparable switching speed
 - substitute for high voltage thyristors with voltage control of turn on & turn off
 - substitute for electromechanical trigger and discharge relays
- ISOPLUS i4-PAC™ high voltage package
 - isolated back surface
 - enlarged creepage towards heatsink
 - enlarged creepage between high voltage pins
 - application friendly pinout
 - high reliability
 - industry standard outline
 - UL registered E72873

Applications

- switched mode power supplies
- DC-DC converters
- resonant converters
- laser generators, x ray generators
- discharge circuits

IXYS reserves the right to change limits, test conditions and dimensions.

© 2005 IXYS All rights reserved

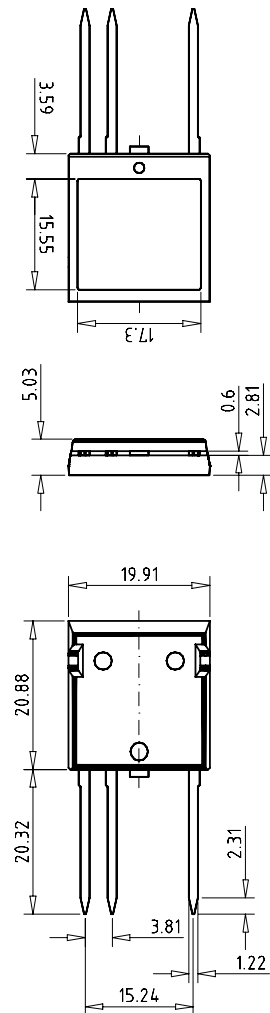
0527

1 - 4

Component

Symbol	Conditions	Maximum Ratings	
T_{VJ}		-55...+150	°C
T_{stg}		-55...+125	°C
V_{ISOL}	$I_{ISOL} \leq 1 \text{ mA}; 50/60 \text{ Hz}$	2500	V~
F_C	mounting force with clip	20...120	N

Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
d_S, d_A	C pin - E pin	7.0		mm
d_S, d_A	pin - backside metal	5.5		mm
R_{thCH}	with heatsink compound	0.15		K/W
Weight		9		g

Dimensions in mm (1 mm = 0.0394")


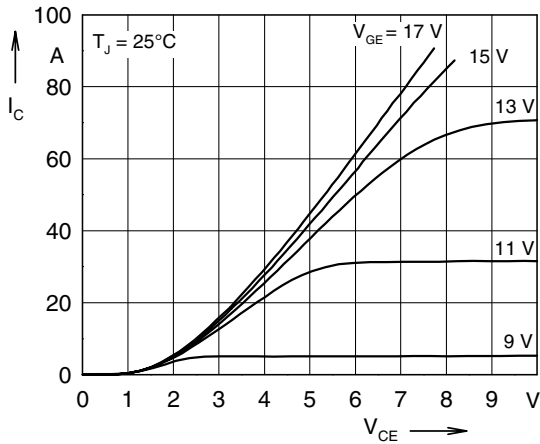


Fig. 1 Typ. Output Characteristics

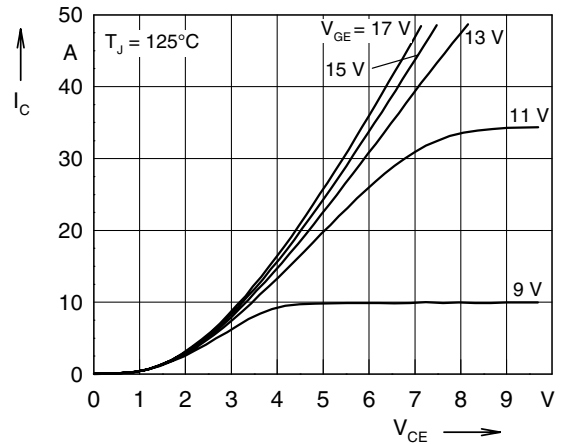


Fig. 2 Typ. Output Characteristics

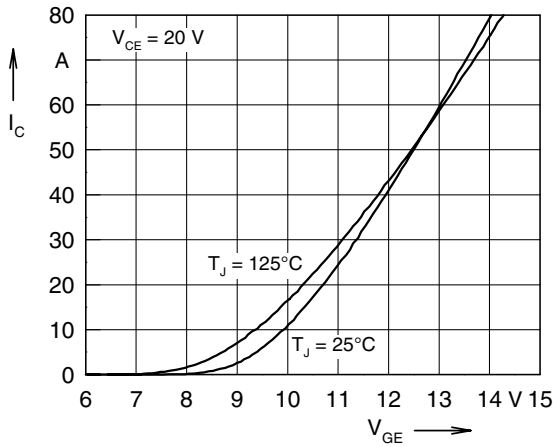


Fig. 3 Typ. Transfer Characteristics

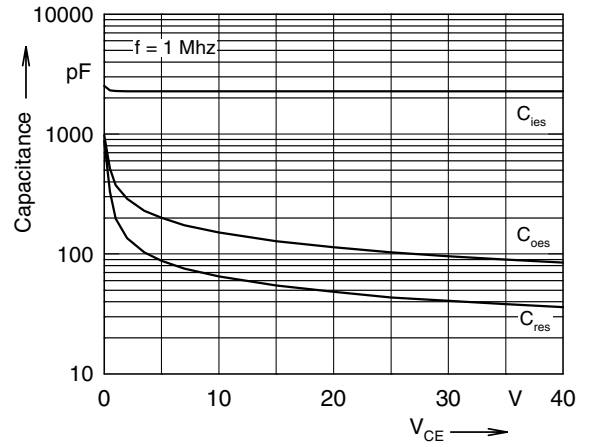


Fig. 4 Capacitance curves

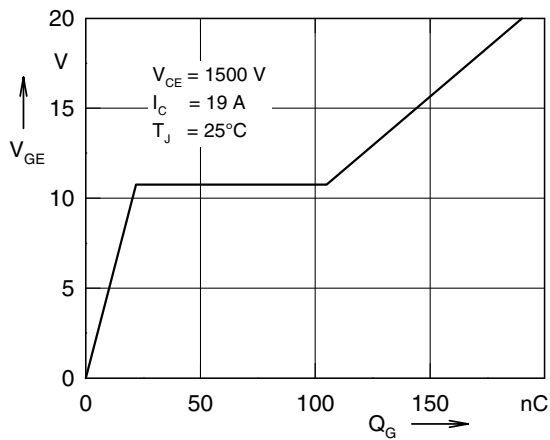


Fig. 5 Typ. Gate Charge characteristics

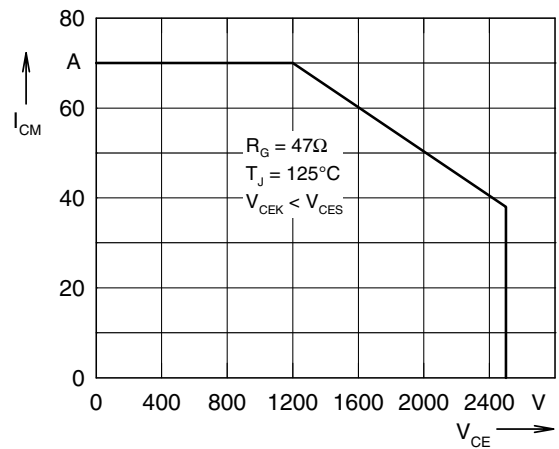


Fig. 6 Reverse Biased Safe Operating Area RBSOA

IXYS reserves the right to change limits, test conditions and dimensions.

© 2005 IXYS All rights reserved

0527

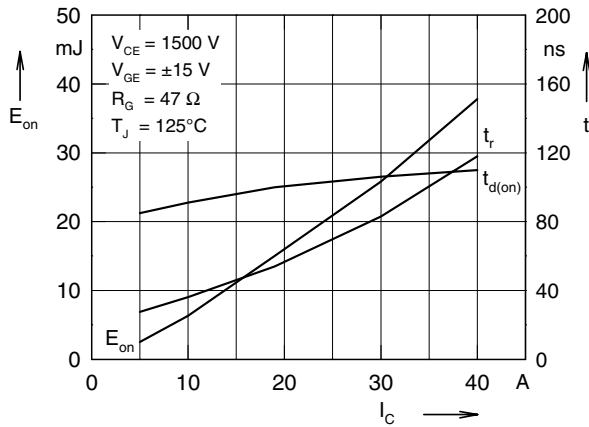


Fig. 7 Typ. turn on energy and switching times versus collector current

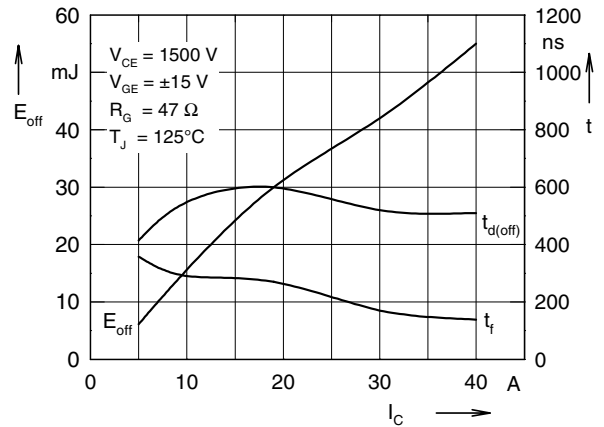


Fig. 8 Typ. turn off energy and switching times versus collector current

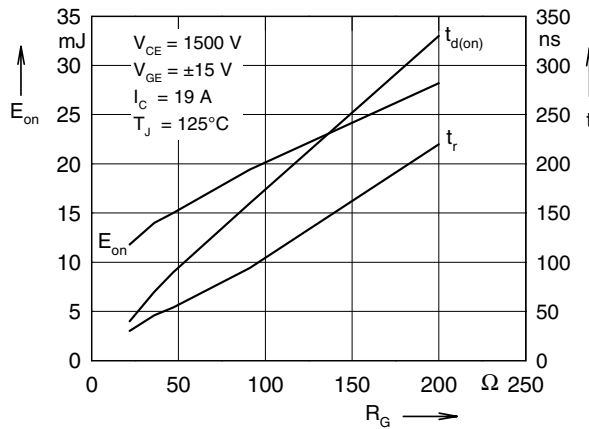


Fig. 9 Typ. turn on energy and switching times versus gate resistor

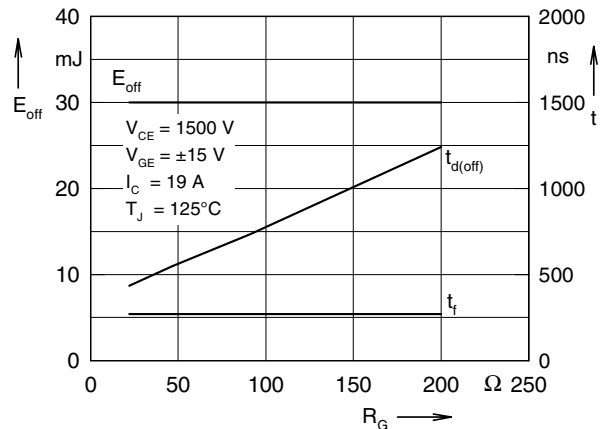


Fig. 10 Typ. turn off energy and switching times versus gate resistor

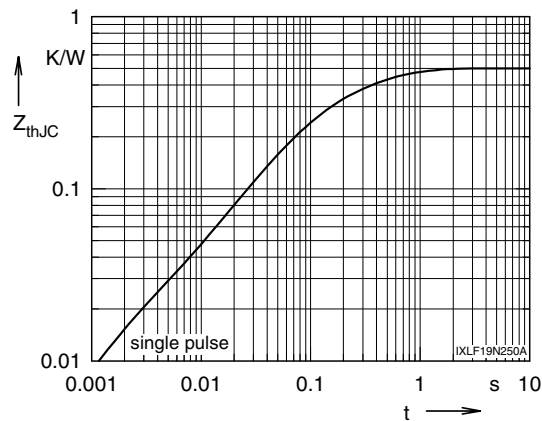


Fig. 11 Typ. transient thermal impedance